The 50 MHz DX Bulletin

Volume 4 — **1993 March** — **Issue #3**

The 50 MHz DX Bulletin was founded by Harry Schools KA3B. It is dedicated to the understanding and utilization of long distance propagation in the 6-meter Amateur band. This issue, edited and published by Victor Frank, K6FV, is the sixth "fill-in" issue and was actually written in October 1993. Subscription rates are $20 U.S. third class mail, $25 U.S./Canada/Mexico airmail, $25 by surface or $30 airmail elsewhere for 12 issues. Circulation matters and DX reports should be sent to 12450 Skyline Blvd., Woodside, CA 94062-4541 USA. If you can reach the Internet, my address there is frank@marie.sri.com The Bulletin may be freely quoted, provided that credit is given.

Subscription Renewals

Having filled 1992, it is time to start collecting subscription payments from those of you whose subscriptions ended during 1992. Your payment for 12 issues will allow me to bump your expiration date ahead one year and eventually we'll be able to feed the current month into our mailing list program. Your subscription expiration date is on line 1 of your mailing label; EXP 9212 means your last paid issue was December 1992.

Errata: Wrong-way Auroral Scattering

SM7AED remarks (regarding note on front page of September 1993 issue): Must be a misunderstanding somewhere! It should be: SM7FJE could hear G4VXE/TF every time **G4VXE/TF** had his beam SE. Ahhhh!

The 50 MHz Spot

Dave Hardy, G8ROU, announced in October 1993 *VHF-UHF DXer* that David Ackrill, G0DJA, has 'volunteered' to take over the duties filling the 50 MHz Spot, after the departure of Tim, G4VXE, to VE3. David's address is 104, Durkar Lane, Crigglestone, Wakefield WF4 3HY ENGLAND.

Aurora

From The 50 MHz Spot in October 1993 *VHF-UHF DXer*, Chris, G4IFX (IO94) reported hearing Aurora on September 3, 12, 13, 20 and 29. The event on the 12th brought in the usual GB3LER & GB3RMK auroral along with Jon, OY9JD. The most interesting signal that Chris heard, however, was OH9SIX at 55A—that's quite a long way north. The best event was probably on the 13th, GB3LER was heard Auroral very early (0627) with the main event being in the afternoon. G0DJA worked a few stations on CW on this event including OY9JD and OZ3ZW.

From the 2m Report in the same issue, G4PIQ, Andy Cook reports on a small auroral event on the September 20, with GW4VEQ, G4RKV, and G0CUZ reporting GB3LER and GM4YXI. Then on the 29th G8WVI and G6ZWP reported hearing GB3LER between 1530 and 1800.

Perhaps we in the U.S.A. would catch more of these auroral openings if we had more 2m or 220 MHz beacons properly aimed. My K6FV 50.069 MHz beacon is being beamed NE some evenings (now that TEP season has passed for us). If you hear auroral hiss on it some night, please let me know.

Writing of 2m beacons, the November 1993 issue of *West Coast VHFer* indicates that KD0DW in DN70lf has just put a 100 W beacon on 144.275.

Al Pacheco, KH6IAA

The same issue of *West Coast VHFer* indicates that KH6IAA suffered a stroke this last month while visiting in Spokane, Washington. It further says that Al is back home now, and it would be nice if he received some cards from the many who have worked Al for Hawaii. His address is 20 Mokuhona Lane, Hilo, Hawaii 96720.

February 1993 DX Reports

The following 50 MHz reports of DX heard and worked in Japan are courtesy of JR3HED. The year (1993) and month (February) are understood, the day of the month precedes the time, and both have been converted into UTC. The call at the right indicates the reporting station, or if a number(s), the JA call areas reporting the DX. Symbols V = Video carrier, F = FM audio, B = beacon, C = CW, S = SSB.

Africa (Indian Ocean)

Reunion Island:

221010	FR5SIX/B	LG78	50.022	B	JR6WPT
221140	FR5SIX/B	LG78	50.022	B	JR6WPT

Asia

Burma:

101340	XU0UN	OK21	50.110	S	JR6WPT
181430	XU0UN	OK21	50.110	S	JR6WPT
181530	XU0UN	OK21	50.110	S	JR6WPT
21 253	XU0UN	OK21	50.130	S	JA9TLD
21 316	XU0UN	OK21	50.130	S	JA7WSZ
21 320	XU0UN	OK21	50.1	S	JH0BQX
21 325	XU0UN	OK21	50.115	C	1
231300	XU0UN	OK21	50.110	S	JR6WPT
241300	XU0UN	OK21	50.110	S	JR6WPT
27 713	XU0UN	OK21	50.110	S	JP2NPG
27 720	XU0UN	OK21	50.110	S	01 7/9
27 738	XU0UN	OK21	50.110	S	JH0BQX
3 911	XU5DX	OK10	50.110	C	JR6WPT
3 915	XU5DX	OK10	50.110	C	JE6OKI
10 828	XU5DX	OK10	50.110	C	2/3
101330	XU5DX	OK10	50.110	C	JR6WPT
11 822	XU5DX	OK10	50.110	C	2/3/9
181400	XU5DX	OK10	50.110	C	JR6WPT
21 252	XU5DX	OK10	50.115	C	1
21 301	XU5DX	OK10	50.115	C	JA9TLD
21 311	XU5DX	OK10	50.115	C	JA7WSZ
21 702	XU5DX	OK10	50.110	C	1
221300	XU5DX	OK10	50.110	C	JR6WPT
231250	XU5DX	OK10	50.110	S	JR6WPT
241240	XU5DX	OK10	50.110	C	JR6WPT

Hong Kong:

21 224	VS6BG	OL72	50.100	C	JA7WSZ
21 225	VS6BG	OL72	50.099	C	JA9TLD
21 225	VS6BG	OL72	50.100	C	JA4OEY/1
21 227	VS6BG	OL72	50.100	C	JF1CZQ
181200	VS6SIX/B	OL72	50.074	B	JR6WPT
181229	VS6SIX/B	OL72	50.075	B	JE3GUG
20 230	VS6SIX/B	OL72	50.074	B	JA4OEY/1
201230	VS6SIX/B	OL72	50.074	B	JR6WPT

Hong Kong (February 1993 Continued):

21 220	VS6SIX/B	OL72	50.074	B	JA4OEY/1
21 224	VS6SIX/B	OL72	50.074	B	JA7WSZ
21 226	VS6SIX/B	OL72	50.075	B	JA9TLD

Korea, South:

20 147	HL9UH		50.110	C	JA7WSZ
20 155	HL9UH		50.110	C	JF1CZQ
21 235	HL9UH		50.113	C	JA7WSZ
21 228	HL9UH		50.113	C	JA9TLD
21 230	HL9UH		50.114	C	JF1CZQ
21 243	HL9UH		50.115	C	1

Europe

25 755	EU-TV		48.250	V	1

Oceania

Australia:

7 418	ABMN-0		46.240	V	JE3GUG
11 250	ABMN-0		46.240	V	JE3GUG
12 305	ABMN-0		46.240	V	JE3GUG
7 418	TVQ-0		46.170	V	JE3GUG
11 250	TVQ-0		46.170	V	JE3GUG
12 305	TVQ-0		46.160	V	JE3GUG
13 350	TVQ-0		46.170	V	JE3GUG
20 553	VK-TV		51.670	F	JA9TLD
21 227	VK-TV		51.670	F	JA9TLD
22 450	VK-TVQ0		46.170	V	JE3GUG
25 845	VK-TVQ0		46.170	V	JE3GUG
27 901	VK-TVQ0		46.170	V	JE3GUG
271342	VK-TVQ0		46.170	V	JE3GUG
28 325	VK-TVQ0		46.170	V	JE3GUG
281030	VK-TVQ0		51.670	F	JE3GUG
181130	VK1RX	QF44	50.110	S	JR6WPT
20 642	VK2EEC		50.110	S	JA9TLD
20 352	VK2EVC		50.115	S	JA7WSZ
181207	VK2FLR		50.104	C	JA9TLD
11 315	VK2GLS	QF56	50.115	S	JH0HQP
20 642	VK2GRS		50.110	C	JA9TLD
181120	VK2QF	QF47	50.103	C	JR6WPT
20 345	VK2QF	QF47	50.105	C	JH0BQX
20 347	VK2QF	QF47	50.105	C	JA7WSZ
21 258	VK2YLO		50.134	S	JA7WSZ
11 319	VK2ZXC		50.130	S	0/9
181001	VK3AXH		50.109	C	JE3GUG
181011	VK3BDL		50.160	S	JP2NPG
21 208	VK3CVF		50.120	C	JA9TLD
181000	VK3DUT		50.110	S	JE3GUG
181140	VK3OT		50.100	C	JR6WPT
181149	VK3OT		50.110	C	JE3GUG
181349	VK3OT		50.	C	JA9TLD
16 500	VK4's		50.	S	JH0HQP
241053	VK4ABW	QH30	50.120	S	JH2GZY
241130	VK4ABW	QH30	50.110	S	JR6WPT
251219	VK4ABW	QH30	50.110	S	JA9TLD
271057	VK4ABW	QH30	50.105	C	JE3GUG
21 226	VK4AFL		50.157	S	JA7WSZ
21 244	VK4AFL		50.195	S	JA9TLD
21 643	VK4AFL		50.145	S	JP2NPG
21 645	VK4AFL		50.145	S	JH2GZY
27 403	VK4AFL		50.120	S	JH0BQX
28 850	VK4AFL		50.145	S	JK1AFU
5 508	VK4ALM		50.122	S	JH0ISW
5 404	VK4APG	QG62	50.110	S	JH0ISW
20 548	VK4APG	QG62	50.110	S	JA0LSQ
20 552	VK4APG	QG62	50.150	S	JA9TLD
20 614	VK4APG	QG62	50.150	S	JP2NPG
28 850	VK4APG	QG62	50.185	S	JK1AFU
20 648	VK4AR	QG62	50.101	C	JA9TLD
21 226	VK4AR	QG62	50.120	C	JF1CZQ
13 637	VK4ARN		50.105	S	JK2VOC
21 248	VK4BDF		50.110	S	JA7WSZ
21 249	VK4BDF		50.109	S	JA9TLD
11 320	VK4BRG	QG48	50.130	S	JH0HQP
27 408	VK4BRG/B	QG48	50.078	B	JH0BQX
21 620	VK4DO		50.110	C	JH2GZY
21 729	VK4DO		50.110	C	JH2GZY
13 508	VK4EJR		50.110	S	JH0BQX
13 532	VK4EJR		50.125	S	JA9TLD
19 608	VK4FAR	QG64	50.105	C	JK2VOC
161157	VK4FP	QH30	50.100	C	JA9TLD
181045	VK4FP	QH30	50.110	C	JE3GUG
181203	VK4FP	QH30	50.087	C	JP2NPG
241145	VK4FP	QH30	50.110	C	JR6WPT
271132	VK4FP	QH30	50.100	C	JF1CZQ
271136	VK4FP	QH30	50.097	C	JP2NPG
271142	VK4FP	QH30	50.097	C	JA4OEY/1
281047	VK4FP	QH30	50.105	C	JH0BQX
281105	VK4FP	QH30	50.150	S	JH0BQX
281108	VK4FP	QH30	50.150	S	JE3GUG
22 544	VK4GME		50.110	S	1
25 812	VK4GME		50.110	S	1
28 825	VK4GME		50.110	S	All JA Area
12 815	VK4GMH		50.125	S	JH0HQP
15 525	VK4GMH		50.105	S	JP2NPG
17 736	VK4GMH		50.120	S	JH2GZY
20 506	VK4GMH		50.106	S	JA7WSZ
27 355	VK4GMH		50.130	S	JH0ISW
27 404	VK4GMH		50.130	S	JH0BQX
28 840	VK4GMH		50.125	S	JK1AFU
28 844	VK4GMH		50.125	S	JP2NPG
28 859	VK4GMH		50.125	S	JI3OYM
5 405	VK4IAM	QG64	50.110	S	JH0ISW
12 829	VK4IAM	QG64	50.125	S	JA7WSZ
13 629	VK4IAM	QG64	50.125	S	JK2VOC
17 738	VK4IAM	QG64	50.110	S	JH2GZY
27 414	VK4IAM	QG64	50.135	S	JH0BQX
28 902	VK4IAM	QG64	50.110	S	JH2GZY
28 907	VK4IAM	QG64	50.125	S	JI3OYM
181048	VK4JH	QH30	50.110	S	JE3GUG
251215	VK4JH	QH30	50.110	C	JA9TLD
281110	VK4JH	QH30	50.110	S	JE3GUG
281125	VK4JH	QH30	50.110	C	AllJAArea
281143	VK4JH	QH30	50.140	S	JA9TLD
13 536	VK4JU		50.110	S	JH2GZY
13 520	VK4KJL	QG62	50.130	S	JA9TLD
20 645	VK4KJL	QG62	50.200	S	JA9TLD
22 609	VK4KJL	QG62	50.110	S	1
21 254	VK4KK	QG62	50.110	S	JF1CZQ
28 430	VK4KK	QG62	50.110	S	JK1AFU
28 943	VK4KK	QG62	50.160	S	JA7WSZ
11 353	VK4KU		50.125	S	JA7WSZ
15 521	VK4KU		50.115	S	JH0HQP
20 455	VK4PG		50.106	S	JA7WSZ
27 416	VK4PG		50.135	S	JH0BQX
27 418	VK4PG		50.135	S	JA7WSZ
28 932	VK4PG		50.130	S	JA7WSZ
13 539	VK4PU	QG63	50.135	S	2/9
281050	VK4RTL/B	QH30	52.441	B	JE3GUG
181120	VK4TL	QH32	50.110	S	JR6WPT
181140	VK4TL	QH32	50.145	S	JP2NPG
181151	VK4TL	QH32	50.110	S	JE3GUG
181208	VK4TL	QH32	50.145	S	JA9TLD
241140	VK4TL	QH32	50.110	S	JR6WPT
28 952	VK4TL	QH32	50.110	C	JA7WSZ
281129	VK4TL	QH32	50.130	S	JA9TLD
15 520	VK4TON		50.115	S	JH0HQP
12 844	VK4UTT	QG63	50.150	S	JA7WSZ
21 303	VK4UTT	QG63	50.130	S	JA9TLD
13 527	VK4WTN		50.125	S	JA9TLD
15 515	VK4WTN		50.115	S	JH0HQP
15 535	VK4WTN		50.130	S	JP2NPG
27 422	VK4WTN		50.130	S	JH0BQX
27 433	VK4WTN		50.102	C	JA7WSZ
28 420	VK4WTN		50.125	S	JK1AFU
28 951	VK4WTN		50.110	S	JA7WSZ
5 416	VK4XA	QG62	50.		JH0ISW
11 400	VK4XA	QG62	50.099	C	JE3GUG
27 407	VK4XA	QG62	50.099	C	JH0BQX
27 440	VK4XA	QG62	50.100	C	JA7WSZ
20 341	VK4ZAZ	QG63	50.110	S	JH0BQX
20 349	VK4ZAZ	QG63	50.110	S	JA7WSZ
20 355	VK4ZAZ	QG63	50.106	S	JH0BQX
20 649	VK4ZAZ	QG63	50.130	S	JA9TLD
28 903	VK4ZAZ	QG63	50.110	S	JH2GZY
17 630	VK5BC	QF05	50.110	C	JH2GZY
17 735	VK5BC	QF05	50.110	C	JH2GZY
181014	VK5BC	QF05	50.103	C	JP2NPG
181150	VK5BC	QF05	50.110	C	JR6WPT
20 703	VK5BC	QF05	50.105	C	JA0LSQ
181150	VK5KL		50.110	C	JR6WPT
20 659	VK6AKT	OF78	50.110	S	JA7WSZ
20 702	VK6AKT	OF78	50.110	S	JA9TLD
20 656	VK6JJ	OF88	50.110	C	JA9TLD
20 714	VK6JJ	OF88	50.107	C	JA7WSZ
61210	VK6JQ	RH12	50.110	C	JR6WPT
161200	VK6JQ	RH12	50.101	C	JA9TLD
181302	VK6JQ	RH12	50.	C	JA9TLD
211202	VK6JQ	RH12	50.105	C	JA9TLD
241150	VK6JQ	RH12	50.115	C	JR6WPT
281141	VK6JQ	RH12	50.115	C	JA9TLD
161237	VK6YCF	OG97	50.110	S	JA9TLD
20 700	VK6ZJD		50.110	S	JA7WSZ
20 701	VK6ZJD		50.110	S	JA9TLD
20 707	VK6ZJD		50.110	S	JA7WSZ
16 408	VK7AD		50.110	S	JH0HQP
16 430	VK7FB		50.110	S	JH0HQP
16 406	VK7KWR		50.110	S	JH0HQP
16 410	VK7ZIF	QE37	50.110	S	JH0HQP
161202	VK8VF/B	PH57	50.057	B	JA9TLD
281045	VK8VF/B	PH57	50.057	B	JE3GUG
281049	VK8VF/B	PH57	50.057	B	JH0BQX
281109	VK8VF/B	PH57	50.057	B	JA7WSZ
281144	VK8VF/B	PH57	50.057	B	JA9TLD
20 353	VK8ZLX	QG66	50.110	S	JA7WSZ
21 232	VK8ZLX	QG66	50.110	S	JA7WSZ
21 234	VK8ZLX	QG66	50.120	S	JF1CZQ
21 237	VK8ZLX	QG66	50.120	S	JA9TLD

Central Kiribati:

20 203	T30JH		50.125	S	JA7WSZ

Hawaii:

25 325	AH6LR		50.120	C	1
7 130	KH6HI/B	BL01	50.065	B	JR6WPT
7 115	KH6HME/B	BK29	50.062	B	JR6WPT
10 252	KH6HME/B	BK29	50.062	B	JR6WPT
7 143	KH6IAA	BK29	50.110	C	JR6WPT

Malaysia:

7 513	9M-TV		48.240	V	JE3GUG
12 533	9M-TV		48.240	V	JE3GUG
22 450	9M-TV		48.240	V	JE3GUG
271345	9M-TV		48.250	V	JE3GUG
22 450	9M-TV		48.260	V	JE3GUG
181209	9M-TV		53.740	F	JA9TLD
10 830	9M-TV		53.740	F	JE3GUG
161230	9M-TV		53.740	F	JE3GUG
181130	9M-TV		53.740	F	JE3GUG
21 227	9M-TV		53.740	F	JA9TLD
25 700	9M-TV		53.740	F	JE3GUG
6 926	9M-TV		53.750	F	JE6OKI
11 620	9M-TV		53.750	F	JE3GUG
161230	9M-TV		53.750	F	JE3GUG
181130	9M-TV		53.750	F	JE3GUG
21 719	9M-TV		53.750	F	JA9TLD
25 700	9M-TV		53.750	F	JE3GUG
181130	9M-TV		53.760	F	JE3GUG
21 227	9M-TV		53.760	F	JA9TLD
25 700	9M-TV		53.760	F	JE3GUG
7 530	9M2CS		50.110	C	JE3GUG
7 540	9M2CS		50.120	C	JA9TLD
7 633	9M2CS		50.120	C	JH0ISW
7 651	9M2CS		50.120	C	JH2GZY
7 830	9M2CS		50.107	C	JH0HQP

New Caledonia:

20 437	FK8EB		50.120	C	JA7WSZ

New Zealand:

6 205	ZL-TV		45,250	V	JE3GUG
7 720	ZL-TV		45,250	V	JE3GUG
12 120	ZL-TV		45.250	V	JE3GUG
28 602	ZL-TV		45.250	V	JE3GUG
28 602	ZL-TV		45.260	V	JE3GUG
6 327	ZL1AKW		50.110	S	JA7WSZ
6 254	ZL1ANJ	RF73	50.125	S	JA7WSZ
28 347	ZL1AXB		50.111	C	JA4OEY/1
6 257	ZL1TJB		50.110	S	JA7WSZ
28 345	ZL1TXB		50.110	C	1
28 339	ZL2TPY		50.125	S	JA4OEY/1
28 355	ZL2TPY		50.148	S	JK1AFU
28 435	ZL2TPY		50.140	S	JR0QFA
6 327	ZL2UCG		50.110	S	JA7WSZ
6 256	ZL3AAU	RE56	50.110	S	JA7WSZ
6 353	ZL3AAU	RE56	50.115	S	JH0HQP
6 402	ZL3AAU	RE56	50.115	S	JH0ISW
6 350	ZL3MHF/B	RE66	50.043	B	JH0HQP
6 333	ZL3NE		50.112	C	JA7WSZ
6 408	ZL3TGI		50.115	S	JH0ISW
7 615	ZL3TGI		50.110	S	JA9TLD
6 337	ZL3TLG		50.110	S	JA7WSZ
6 350	ZL3TLG		50.140	S	JH0HQP
6 353	ZL3TLG		50.140	S	JH0ISW
6 355	ZL3TLG		50.115	S	0/1
6 334	ZL3TY	RE57	50.110	S	JA7WSZ
6 352	ZL3TY	RE57	50.115	S	JH0HQP
6 354	ZL3TY	RE57	50.150	S	JH0ISW
28 410	ZL3TY	RE57	50.135	S	JK1AFU
28 421	ZL3TY	RE57	50.120	S	JR0QFA
6 325	ZL3UJH		50.110	S	JA7WSZ
6 352	ZL3UZC		50.110	S	JH0HQP
5 416	ZL4AAA	RF65	50.105	C	JH0ISW
12 315	ZL4AAA	RF65	50.110	C	JE3GUG
20 349	ZL4AAA	RF65	50.110	C	JA7WSZ
23 304	ZL4AAA	RF65	50.110	C	1
16 405	ZL4TBN	RE54	50.110	S	JH0HQP

Papua/New Guinea:

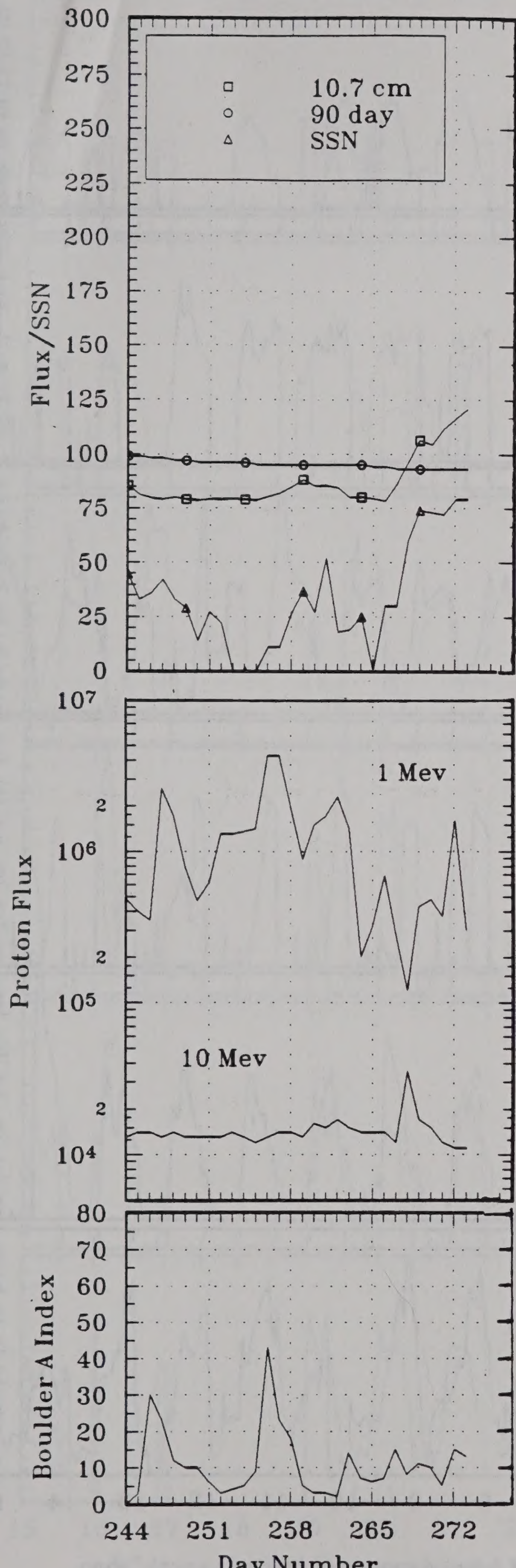
281105	P29BFL/B	QI30	50.019	B	JE3GUG
271117	P29JA		50.125	C	JP2NPG
271130	P29JA		50.125	C	JF1CZQ
271145	P29JA		50.125	C	JA4OEY/1
271154	P29JA		50.125	S	JA4OEY/1
281059	P29PL	QI30	50.110	S	JP2NPG
281101	P29PL	QI30	50.125	S	JE3GUG

Philippines:

61150	DX1HB/B	PK04	50.008	B	JE3GUG
9 840	DX1HB/B	PK04	50.008	B	JA7WSZ
10 828	DX1HB/B	PK04	50.008	B	JA7WSZ
11 357	DX1HB/B	PK04	50.008	B	JA7WSZ
16 846	DX1HB/B	PK04	50.008	B	JA7WSZ
161016	DX1HB/B	PK04	50.008	B	JP2NPG
161204	DX1HB/B	PK04	50.008	B	JA9TLD
161230	DX1HB/B	PK04	50.008	B	JE3GUG
181143	DX1HB/B	PK04	50.008	B	JP2NPG
181155	DX1HB/B	PK04	50.008	B	JR6WPT
181200	DX1HB/B	PK04	50.008	B	JE3GUG
181208	DX1HB/B	PK04	50.008	B	JA9TLD
20 128	DX1HB/B	PK04	50.008	B	JA7WSZ
21 212	DX1HB/B	PK04	50.008	B	JA7WSZ
21 226	DX1HB/B	PK04	50.008	B	JA9TLD
21 240	DX1HB/B	PK04	50.008	B	JA4OEY/1
21 718	DX1HB/B	PK04	50.008	B	JA9TLD
25 823	DX1HB/B	PK04	50.008	B	JA7WSZ
251157	DX1HB/B	PK04	50.008	B	JE3GUG
27 740	DX1HB/B	PK04	50.008	B	JH0BQX
27 751	DX1HB/B	PK04	50.008	B	JA7WSZ
271340	DX1HB/B	PK04	50.008	B	JE3GUG
271350	DX1HB/B	PK04	50.008	B	JP2NPG

Pitcairn:

1 226	VR6JJ		50.120	C	11 4
26 157	VR6JJ/B		50.120	B	1
26 202	VR6JJ		50.120	C	1



September 1993 Ionospheric Report

September is a month of change from summertime ionospheric conditions to fall. It is not a month in which you find much Sporadic-E propagation; but is one in which the northern and southern hemisphere ionospheres come into balance. August, September, and October are months noted for Transequatorial VHF propagation. They are also months noted for Auroral activity.

The source of the data and synopses following is Solar Terrestrial Dispatch (STD) in Stirling, Alberta, Canada. Notes describing the reports issued by STD were printed in our 1992 May, 1992 July, 1992 September, and 1992 October issues. The latter two were actually published in 1993 May and June.

I have plotted in the column to the left, the usual solar-terrestrial observables, sunspot number and solar flux, proton flux (from the sun, in the vicinity of the earth), and Boulder A-index. Day number 244 is September 1. Sunspot numbers and 10.7 cm flux continue their decline. Four days in the month the sun was spotless. We had about 4 periods of enhanced 1 Mev proton flux, which generally corresponded to solar coronal holes, not sunspots or solar flares. Two periods of increased magnetic activity—as measured by the Boulder A index—were observed, on the 3rd and 13th.

On the following pages 4-5, I have plotted the foF2 for six stations: from N to S, Russian stations Murmansk and Khabarovsk; Wallops Is., VA; Maui, HI; Taoyuan, Taiwan; and Learmonth, Australia. Note the change of scale for the stations in the tropics. We still have foF2 values in excess of 14 MHz occasionally for Maui and Taoyuan, indicating that 50 MHz F2 propagation should have been possible somewhere over the Pacific.

The ionosphere, by the way, didn't disappear over the 17-18th; STD just missed those days. Missing data was given the value 0.1, which plots off the bottom of each chart.

On pages 6 & 7, I have plotted the foEs for the same six Russian stations that were plotted last month. Some correlation was observed with the activity of the 2nd and 13th, but there's a lot on uncorrelation as well. I suspect that Ashkhabad was out of service the last ten days of the month.

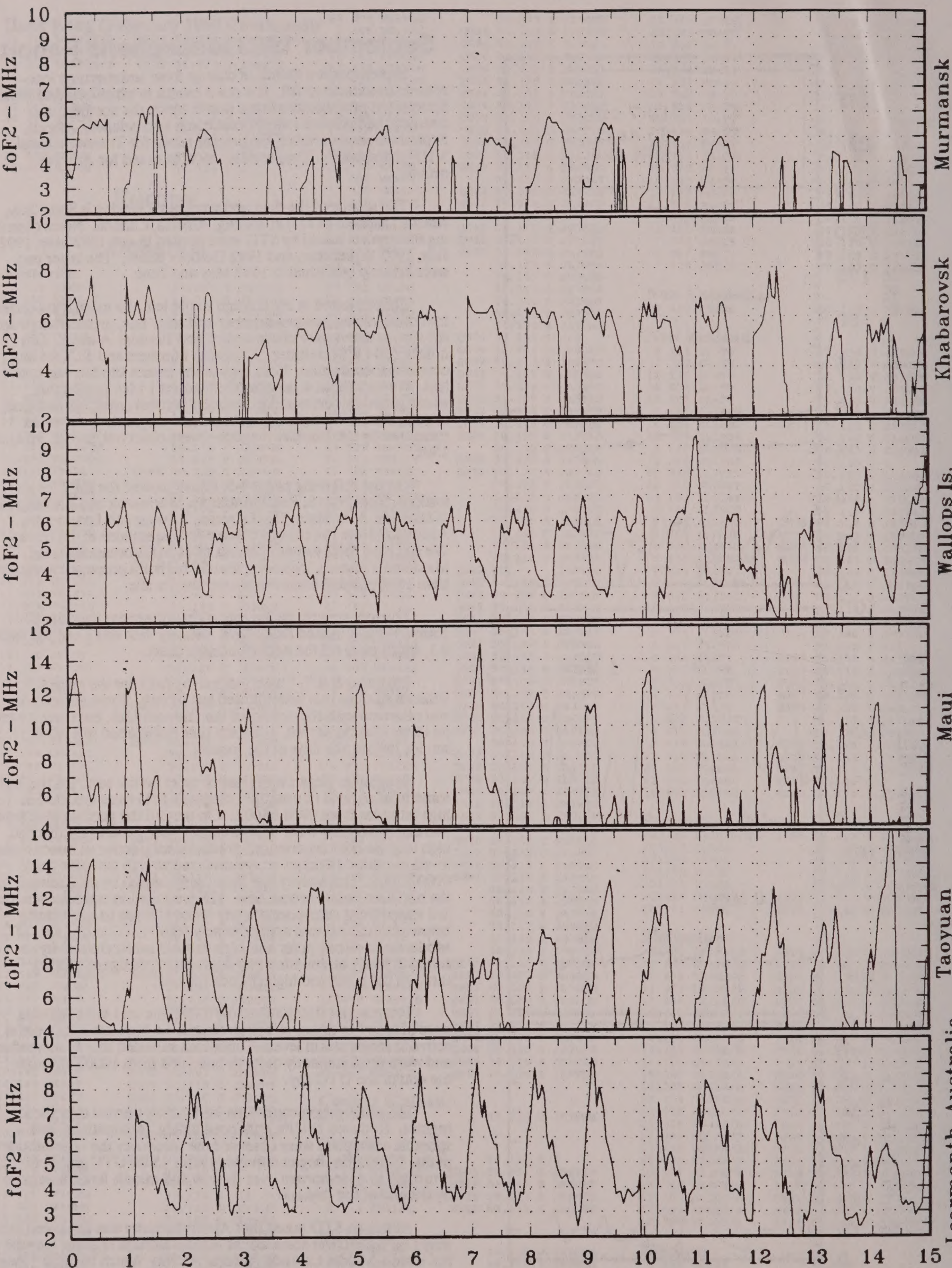
September began with relative quiet on the sun. On the 2nd some brief periods of unsettled magnetic field were reported at high latitudes from 0900-1500Z. On the 3rd the geomagnetic field was disturbed after 00Z. Mid-latitudes were generally active and high latitude sites experienced predominantly active to minor storm levels. A period of major storm occurred at high latitudes from 0900-1200Z. The activity was most likely caused by an extension of the northern polar coronal hole. HF propagation conditions on the 3rd varied from near-normal early in the UT day to significantly below-normal between approximately 09:00 UTC and 15:00 UTC. Moderate to strong polar and high latitude substorm activity resulted in heavy attenuation and degradation of signals passing through the polar and high latitude regions.

From about 03/2300Z to 04/1000Z the mid-latitudes sites were at active to minor storm levels and the high-latitudes were at active to major storm levels. Conditions subsided shortly thereafter and were predominantly quiet to unsettled from 1000Z through the end of the UTC day.

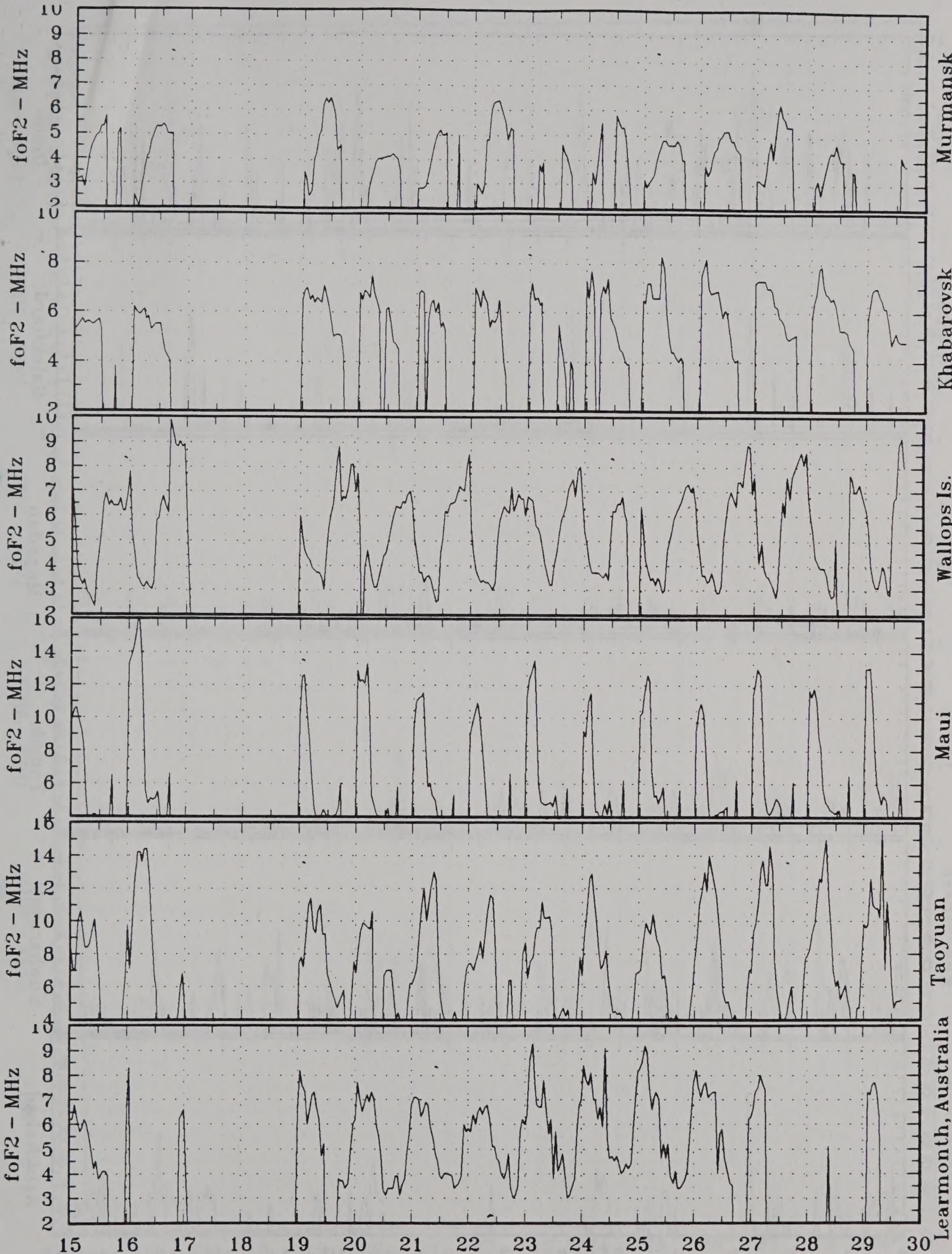
HF propagation conditions were below normal over most regions. Reduced MUFs, enhanced fading, multipathing, and sporadic absorption were observed the most over the high latitude paths. Conditions began improving after 15:00 UTC and were returning to near-normal over the low and middle latitude regions by the end of the day.

Although STD noted that Auroral activity was enhanced and might be visible over some upper middle latitude regions, they did not issue a Middle Latitude Auroral Activity Watch because " Any activity observed south of the Canadian / U.S. border will be strongly drowned out by the light of the moon."

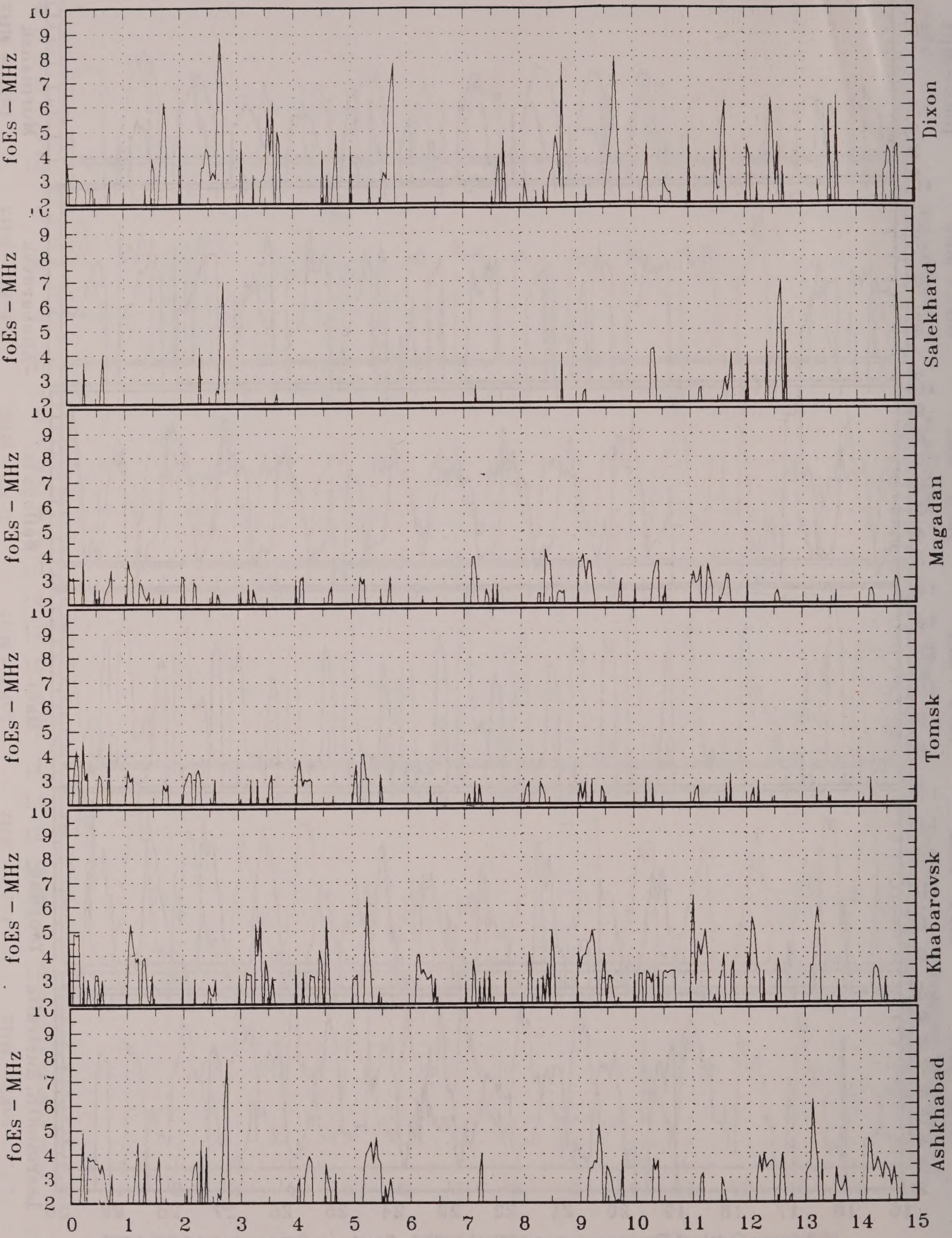
(Continued on page 8)



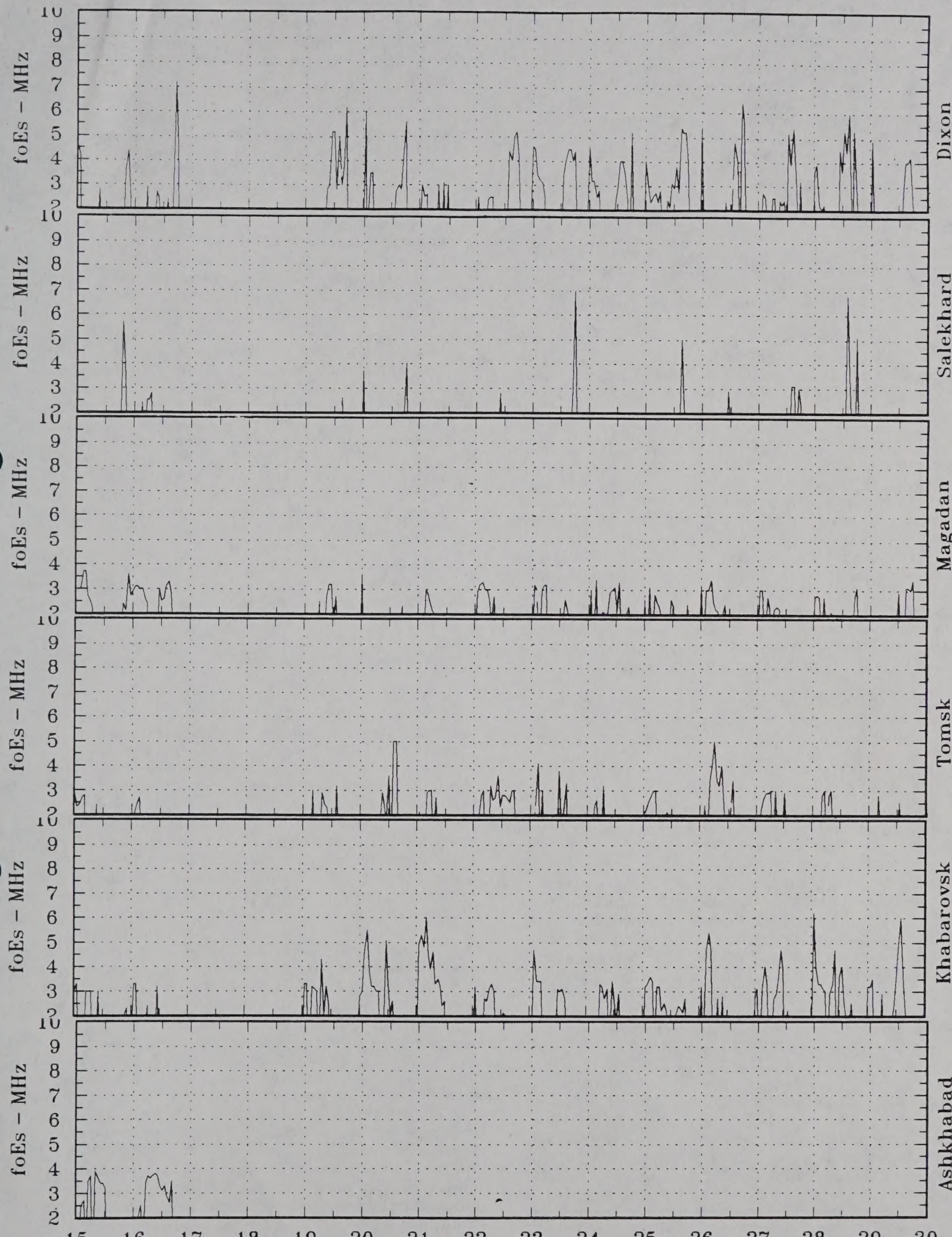
F2-layer Critical Frequencies at 6 World-Wide Stations, September 1-15, 1993



F2-layer Critical Frequencies at 6 World-Wide Stations, September 16-30, 1993



Sporadic-E Critical Frequencies over Russia, September 1-15, 1993



Sporadic-E Critical Frequencies over Russia, September 16-30, 1993

(February 1993 DX Reports Continued from Page 2)

South America

Brazil:

10	057	PY2AA/B	GG66	50.060	B	JR6WPT
20	130	PY2AA/B	GG66	50.060	B	JR6WPT
20	200	PY2AA/B	GG66	50.060	B	JR6WPT
20	300	PY2AA/B	GG66	50.060	B	JR6WPT
20	400	PY2AA/B	GG66	50.060	B	JR6WPT
20	500	PY2AA/B	GG66	50.060	B	JR6WPT
25	330	PY2AA/B	GG66	50.060	B	JR6WPT
20	200	PY2AMI/B	GG67	50.075	B	JR6WPT
25	330	PY2AMI/B	GG67	50.076	B	JR6WPT
25	335	PY4RBY		50.110	S	JR6WPT
10	057	PY5CC	GG54	50.110	C	JR6WPT
17	030	PY5CC	GG54	50.110	S	JR6WPT
25	345	PY5CC	GG54	50.110	C	JR6WPT

(September 1993 Ionosphere Continued from Page 3)

On September 7, STD reported a brief active geomagnetic field period between 0800-0900Z. Although reporting HF propagation conditions near normal, the next day they indicated that MUFs continued to show depressions of up to 25%.

On September 8, they reported the existence of a large coronal hole extending from near the southeast limb to central meridian near N15. This hole had increased in east-west extent during the past 27 days. It has also nearly connected to a lobe of the northern polar hole. This coronal hole was detected by an x-ray imaging satellite instrument called Yohkoh.

As you may remember from page 8 of our 1992 May issue, a coronal hole is a region where the magnetic field lines of the sun are open. Since charged particles follow the magnetic field lines, they are there allowed to escape into interplanetary space where they may or may not impinge on the Earth's space environment. Coronal holes are deficient of x-ray emissions compared to the surrounding areas.

On September 9, STD reported that background x-ray fluxes from the sun had fallen to a point where particle contamination of the x-ray sensors on the Yohkoh satellite was evident.

Prior to September 10, the sun was last devoid of spots on July 14, 1987. It so lasted until the 13th. Geomagnetic and auroral activity and background x-ray levels picked up gradually late on the 12th.

By the 13th, things got interesting. The geomagnetic field was at active to major storm levels for the for the entire UTC day at middle latitudes. Activity at higher latitudes ranged from active to severe storm levels. Storming at all latitudes commenced near 13/0000Z. Activity declined to mostly active levels by near 13/1500Z. A properly positioned coronal was probably responsible for the storming. Very bright aurorae were observed over Seattle, Washington, USA from approximately 13/0630-0930Z as a result of the storming.

The entire northern section of the U.S. that was not under cloud-cover reported auroral activity observations. Activity was reported as far south as Toledo, Ohio (N41 W83), although the reported characteristics of the activity in that region indicated that auroral activity (particularly auroral rays) could have been spotted well south of Toledo.

HF propagation conditions were disturbed over almost all regions. Middle to polar latitude paths observed heavy degradation, producing poor to fair propagation over the middle latitude paths, and very poor to useless propagation through the high and polar latitude paths. Some improvements were reported over the middle and low latitude paths after 15:00 UTC when levels of activity began to stabilize, although signals were still strongly affected by the recent activity.

On the 14th the geomagnetic field was at unsettled to minor storm levels at middle latitudes. The high latitude field ranged from unsettled to major storm levels. Middle latitude storm levels subsided near 14/1200Z while high latitude storming persisted until near 14/1800Z.

HF propagation conditions continued below normal over most regions except the lower latitudes, which had near-normal conditions throughout the day. Global MUFs were down by approximately 30 to 40 percent over all regions, particularly the middle, high, and polar latitude paths. Numerous reports of blanketing sporadic-E were received.

On the 15th, minor storming occurred at some high latitude stations from 15/0600-0900Z, and HF propagation conditions continued below-normal for the polar and high latitude regions where residual activity and a weakened post-storm ionosphere continued to degrade signals with fading, multipathing, and absorption. MUFs remained depressed between 20 and 40 percent over the middle latitude regions, and between 30 and 45 percent over the high and polar latitude regions. Gradual improvements were observed. By the end of the UTC day, many polar and high latitude areas were returning to near-normal.

The next report of geomagnetic activity was on September 20, when high and polar latitude paths saw slightly below-normal conditions. Enhanced levels of polar and high latitude geomagnetic and auroral activity was responsible for producing periods of minor signal degradation throughout the day. Effects were most pronounced over night-sector paths.

On the 23rd, HF propagation conditions were near-normal until approximately 12:00 UTC. Following the arrival of two small sudden impulses, transpolar and transauroral circuits began showing signs of intensifying signal degradation. Periods of enhanced absorption, multipathing, and spread-F were reported between 12:00 UTC and the end of the UTC day. The first of these sudden magnetic impulses, observed at 23/1029, appeared to be associated with a fairly strong level of magnetospheric RAM pressure, inferred by concentrated magnetospheric fields at geosynchronous altitudes. The second, and a third observed at 24/2058 lacked these characteristics, but produced enhanced decreases in polar neutron count rates. (Forbush decrease)

On the 29th, STD reported that Yohkoh x-ray images showed a moderately large and bright region approaching the northeast limb near N20. This region was responsible for producing a limb spray accompanied by a moderately strong Type II sweep at 02:44 UTC and a tenflare. Several very long-decay x-ray events were also been observed throughout the day, and are now thought to be attributed to this east-limb region. Also of interest on this date was the occurrence of a brief, but notable enhancement in protons. Protons at greater than 10 MeV reached a maximum of 2 pfu at 0610 UTC. Protons with energies as high as 100 MeV also showed a simultaneous increase by over a magnitude, to approximately 0.4 pfu. This activity was interesting in two respects: most of the particles had energies greater than 30 MeV, and the enhancement was not reliably correlated with any optical or x-ray activity. However, further investigation now suggests a southwest-limb source was likely responsible.